

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH

SJIF Impact Factor 8.084

Volume 11, Issue 5, 2351-2376.

Review Article

ISSN 2277-7105

LITERARY ANALYSIS OF HARITAKI FROM A BIRD'S EYEVIEW

Shreyosi Ray¹* and Salka Debbarma²

¹Assistant Professor, Department of Dravyaguna Vigyana, Raghunath Ayurved Mahavidyalaya and Hospital, Contai, Purba Medinipur, West Bengal, India. ²Assiatant Professor, Department of Dravyaguna Vigyana, Chandrashekhar Singh Ayurved Samsthana, Koilaha, Kaushambi, Allahabad, Uttar Pradesh, India.

Article Received on 20 March 2022,

Revised on 09 April 2022, Accepted on 30 April 2022

DOI: 10.20959/wjpr20225-24034

*Corresponding Author Shreyosi Ray

Assistant Professor, Department of Dravyaguna Vigyana, Raghunath Ayurved Mahavidyalaya and Hospital, Contai, Purba Medinipur, West Bengal, India.

ABSTRACT

In recent times, Ayurveda has gained immense importance in the field of treatment and lifestyle modification. But, the root of this science travels back to the ancient times when Mother Nature was the only healer of mankind's dispair. Nature has gifted us with tremendous number of resouces for the betterment of life. Amongst all these sources lies a plant which itself has been named as nector (Amrita). Amrita or Haritaki scientifically known as Terminalia chebula Retz belonging to the family Combretaceae is one of the richest gifts to mankind. Haritaki used singly and in combination is widely known to cure various diseases effectively. It is known to possess antioxidant, hepatoprotective, digestive, laxative, antmicrobial, immunomodulatory, etc properties. Although numerous scientific evaluations are available about this plant, there still lies ample scope

for further study and analysis. This study likely aims at exploring the mines of ancient Ayurvedic texts to discover the facts stated regarding Haritaki.

KEYWORDS: Haritaki, *Terminalia chebula*, Ritu-Haritaki, Pharmacological activities, Classical uses

INTRODUCTION

Haritaki, aslo known as Chebilic myrobalan is one of the widely available and used medicine in Ayurveda. Not only singly but also as an ingredient of numerous compund formulataions Haritaki stand out ubiquitously. Haritaki consists of the pericarp of mature fruits of Terminalia chebula Retz. (Fam. Combretaceae), a moderate sized or large tree found

throughout India, chiefly in deciduous forests and areas of light rainfall, but occasionally also in slightly moist forests, upto about 1500 m elevation, throughout India, flowers appear from April, August and fruits ripen from October-January.^[1]

SCIENTIFIC NAME: *Terminalia chebula* Retz.

FAMILY: Combretaceae.

TAXONOMICAL CLASSIFICATION: acc. to Bentham and Hooker (1862-1883)

Kingdom: Plantae

Subkingdom: Viridiplantae
Infrakingdom: Streptophyta

Superdivision: Embryophyta

Division: Tracheophyta

Subdivision: Spermatophytina

Class: Magnoliopsida

Superorder: Rosanae

Order: Myrtales

Family: Combretaceae

Genus: Terminalia

Species: chebula (Gaertn.) Retz.^[2]

VERNACULAR NAMES

Sanskrit: Abhaya, Kayastha, Siva, Pathya, Vijaya

Assamese : Shilikha Bengali : Haritaki

English: Chebulic Myrobalan

Gujrati: Hirdo, Himaja, Pulo-harda

Hindi: Harre, Harad, Harar

Kannada : AlalekaiKashmiri : HalelaMalayalam : Katukka

Marathi: Hirda, Haritaki, Harda, Hireda

Oriya: Harida

Punjabi: Halela, Harar

Tamil: Kadukkai

Telugu: Karaka, Karakkaya

Halela^[1] Urdu:

SYNONYMS AND THEIR NIRUKTI (ETYMOLOGY)

1. Haritaki: "हरति मलान्, तकति हसति व्याधीन् प्रत्यवञया तज्जेत्रीत्वाच्चेति;

'ह हरणे', 'तक हसने'I" – (भाo)

- 2. Abhaya: "न भयं व्याधीनां सेवनादस्याः रसायनत्वेन व्याधीप्रतिषेधकत्वत I" (भा०)
- 3. Amrita: "अमृतवत् फलदायिनी, रसायनत्वेन जराव्याधीप्रतिषेधात् I" (भा०)
- 4. Amogha: "अव्यर्था I" (अ०)
- 5. Abyatha: "व्यथा शूलं रोगो वा; न व्यथा सेवेननास्या:, शूलहृतत्वाद् रोगनाशकत्वाच्च I" (भा०)
- 6. Kayastha: "कायः स्वस्थस्तिष्ठत्यनया, अन्तर्भावितण अर्थात 'कायं तारुण्ये स्थापयतीति,

वयःस्थापनीत्यार्थः I" – (भा०)

- 7. Chetaki: "चेतयति चित्तं प्रबेधयतीति, यथा उक्तं उन्मीलिनी बुद्धिबलेन्द्रियानाम्' इति I" (**भा**0)
- 8. Jivanti: "जीवन्तं पुरुषं यापयति, स्वस्थ्यकरत्वात् आयुष्करत्वाच्च I" (भा०)
- 9. Panchabhadrika: "पञ्च भद्रा रसा अस्याः I" (अ०म०)
- 10. Pathya: "पथिभ्यः स्रोतोभ्यो हिता, पथोऽनपेता वा; मनःशरीरान्पघातिनीत्यर्थः I" (भा०)
- 11. Putana: "पूतं संशुद्धं करोतीति I" (भा०)
- 12. Pramatha: "प्रमध्नाति दोषान निर्हरति चेति I" (म०नि०)
- 13. Pranada: "प्राणं शक्तिं बलं च ददातीति I" (अ०)
- 14. Rohini: "क्षतादीन रोहयतीति; रसायनत्वेन क्षीणान धातून रोहयतीति वा I" (भा०)
- 15. Vayasya: "वयसे हिता, वयःस्थापनीत्यर्थः। अथवा – वयस्या वन्मनःशरीरप्रसादजननी I" – (भा०)

- 16. Vijaya: "विशेषेण मुलोच्छेदनतो जयति रोगानिति;यथोक्तं-निर्मुलिनी पित्तकफानिलानाम' इति I" – (भाo)
- 17. Siva: "कल्याणकर्तृत्वात; हिमवतप्रदेशे जातत्वेन शिवसाहचर्याच्च I" (भा०)
- 18. Shreyasi: "अतिप्रशस्ता I" (भा०)
- 19. Haimavati: "हिमवति तदुपत्यकायां जाता I पञ्चवक्त्ररसां हैर्मी सर्वशोकनिवारिणीम् I सर्वशक्तिमर्यो वन्दे शिवामभयकारिणीम II इति I" – (भा०)

The fruits of Haritaki has been widely used in Ayurveda by various names. These names has been given for various and reasons and activities. The fruit contains five rasas except lavana (Panchabhadrika), eliminates impurities from the bodies (Haritaki, Pramatha), cleanses the body (*Putana*). It clears the srotas (*Pathya*), improves the vital energy and strength (*Pranada*, Jivanti), is rasayana (Amrita), removes fear of disorders (Abhaya) and maintains youth (Vayasya). It promtes the activities of both body and mind (Kayastha, Cetaki). It rejuvinates the tissues and heals wound (Rohini), is unfailing (Amogha). It is a remedy for all diseases (Avyatha, Vijaya). It has overall salutary effect (Siva) and occupies the highest position among drugs (Shreyasi).[3]

Table 1: Synonyms As Per Different Nighantu.

S.N.	SYNONYMS	DN	HDN	MPN	RN	KN	BPN	SN	NA	MN	PN
1	Abhaya	+	+	+	+	+	+	+	+	+	+
2	Amogha	1	-	+	ı	-	-	ı	-	ı	-
3	Amrita	+	-	+	+	-	+	+	-	+	-
4	Avyatha	+	-	-	+	-	+	+	+	+	-
5	Balya	1	-	-	1	-	-	ı	-	+	-
6	Bisagarbha	-	-	-	+	-	-	-	-	1	-
7	Chetaki	+	+	+	+	-	+	+	+	+	-
8	Devi	-	-	-	+	-	-	-	-	-	-
9	Divya	-	-	-	+	-	-	-	-	-	-
10	Haimavati	+	-	+	+	+	+	+	+	+	-
11	Haritaki	+	+	+	+	-	+	+	+	+	+
12	Jaya	-	-	-	+	-	-	-	-	1	-
13	Jiva	-	-	-	+	-	-	-	-	-	-
14	Jivanti	-	-	+	+	-	+	+	-	+	-
15	Jivapriya	-	-	-	-	-	-	-	-	+	-
16	Kayastha	-	-	+	+	+	+	+	+	1	+
17	Nandini	+	-	+	-	-		-	-	-	-
18	Pathya	+	+	+	+	+	+	+	+	+	+

19	Pranada	+	+	+	+	+	-	-	-	-	-
20	Prapathya	+	-	+	+	+	-	-	-	-	-
21	Priya	-	1	1	+	ı	ı	-	-	-	-
22	Putana	+	1	+	+	ı	+	+	+	+	-
23	Rohini	+	-	+	+	-	+	+	-	+	-
24	Sakha	-	1	1	ı	ı	ı	-	-	+	-
25	Shiva	+	+	+	+	+	+	+	+	+	-
26	Shreyasi	-	-	+	+	+	+	+	+	+	-
27	Sudha	_	1	1	-	ı	ı	-	-	+	-
28	Vayastha	+	-	+	-	-	+	+	-	+	-

(+ denotes presence, - denotes absence)

(DN-Dhanwantari Nighantu, HDN- Hridaya Dipaka Nighantu, MNP-Madanapala Nighantu, RN-Raja Nighantu, KN-Kaiyadeva Nighantu, BPN-Bhavprakash Nighantu, SN-Saligrama Nighantu, NA-Nighantu Adarsha, MN-Mahaushadha Nigraha, PN-Priya Nighantu)

The above table represents the widely used synonyms of Haritaki and their respective presence in various Nighantus. It is observed that Raj Nighantu has the maximum number of synonyms mentiones and least synonyms have been mentioned by Priya Nighantu. Out of the 28 synonyms mentioned above the most common and widely used synonyms are Abhaya, Pathya, Haimavati, Chetaki and Shiva.

VARIETIES

- According to Bhavprakash Haritaki is of 7 types.
- a) Vijaya, b) Rohini, c) Putana, d) Amrita, e) Abhaya, f) Jivanti and g) Cetaki
- According to Kaiyadeva Nighantu Haritaki is if 3 types.
- a) Niraja, b) Vanaja, and c) Parvatiya^[4]

LITERARY REVIEWS OF HARITAKI

VEDIC & PAURANIK PERIOD: Haritaki has not been mentioned in the Vedas. The earliest reference of Haritaki was mentioned by **Panini** who described it for the management of Mutrapurish nirodh (dysurea / anuria and constipation) in 4/4/53.

Table 2. Categorization of Haritaki In Samhitas & Nighantus.

S.N.	TEXTS	GA	ANA / VARGA			
			Jwaraghna			
			Arshoghna			
			$\boldsymbol{\mathcal{C}}$			
1	Caraka Samhita		Kusthaghna			
			Virecanopaga			
			Prajasthapana			
			Vayasthapana			
			5			
2	Sushruta Samhita		Parushakadi			
	Susmuta Sammita					
			\mathcal{E}			
			\mathcal{C}			
	Astanga Sangraha		Hikkanigrahana			
3			Kasahara			
			1			
			Vayasthapana			
			Virecana gana			
4	Astanga Hridaya		Parushakadi gana			
-			8			
5	Dhanwantari Nighantu		o aratificati i targa			
6	Hridaya Deepika nighantu		- · · - F · · · · · · · · · · · · · · ·			
7	Madanpala Nighantu					
8	Raj Nighantu		Amradi varga			
9	Kaiyadeva Nighantu		Aushadhi varga			
10	Bhavprakash Nighantu		Haritakyadi varga			
11	Shaligram Nighantu		Haritakyadi varga			
12	Nighantu Adarsha		Haritakyadi varga			
	Tylghantu Muarsna		Trairitaity aar varga			
13	Mahaushadha Nighantu	*	Mahaushadhi varga			

BOTANICAL DESCRIPTION

A moderate to large deciduous tree with a cylindrical bole, rounded crown and spreading branches, 15-24m high, with rust coloured or silvery hairs over the younger branchles.

Leaves: mostly subopposite, distant, ovate or oblong-ovate, 8-20cm long, deciduous in cold season, glabrous to tawny villous beneath with a pair of large glands at the top of the petiole **Flowers:** dull white or yellowish, strong offensive smell, in spikes from the upeer axils and in small termonal panicles, bloom in April-May.

Friut: drupe, ellipsoidal, obovoid or ovoi, from a broad base, glabrous, yellow to orange-brown, sometimes tinged with red or black and hard when ripe,3-5cm long, 5 ribbed on drying,

Seeds: hard, pale yellow. [4][5]



Sold Charles State Charles Sta

Fig. a. Haritaki Leaves

Fig. b. Haritaki Flowers







Fig. d. Haritaki fruit (dry)

DISTRIBUTION

Abundant in Northern India. It is found throughout the greater parts of India from eastern region to Himalayas to an altitude of 1500m.^[5]

AYURVEDIC PROPERTIES

Rasa- Pancarasa (except lavana), Kasaya mainly

Guna- Laghu, Ruksha

Virya- Usna

Vipaka- Madhura^[6]

RASAPAN	ICHAK	TEXTS								
		BN	MPN	KN	RN	DN	SGN	PN		
	MADHURA	+	+	+	+	+	+	+		
RASA	AMLA	+	+	+	+	+	+	+		
KASA	KATU	+	+	+	+	+	+	+		
	TIKTA	+	+	+	+	+	+	+		
	KASAYA	+	+	+	+	+	+	+		
	RUKSHA	+	+	+	-	+	+	1		
GUNA	USNA	+	+	-	-	-	-	1		
GUNA	LAGHU	+	-	+	-	+	+	+		
	SARA	-	-	-	-	-	-	+		
VIRYA	USNA	+	-	+	-	-	+	+		
VIPAKA	MADHURA	+	+	+	-	_	+	-		

Table 3. Rasapanchaka as per various Nighantu.

Summarising the Rasapanchak mentioned by the various Nighantukaras it can be concluded that Haritaki has Lavana rikta Pancha rasa, Laghu, Ruksha gunas, Usna virya and Madhura Vipaka.

KARMA

- **Dosakarma:** Tridosasamaka, especially Vatasamaka
- Sharirakarma: sothahara, Vadanasthapana, Vranasodhana, vranaropana, Nadibalya, Medhya, Chaksushya, Deepana, Pacana, Yakriduttejaka, Anulomana, Mridurecana, Krimighna, grahi, shonitasthapana, Hridya, Kaphaghna, srotasodhana, Vrishya, Garbhasatasothahara, Prajasthapana, Mutrala, Kusthaghna, Rasayana
- Vyadhikarma: Vatavyadhi, Sothavedanayukta vikara, Vrana, Mukharoga, Kantharoga, Nadidourbalya, Mastishkadourbalya, Natrabhishandhya, Dristimandya, Indriya dourbalya, Agnimandya, Shula, Anaha, Gulma, Vibandha, Udararoga, Arsha, Kamala, Yakritpleehavriddhi, Krimiroga, Hrid dourbalya, Vatarakta, Raktavikara, Sotha, Pratisyaya, Kasa, Swarabheda, Hikka, Swasa, Prameha, Sukrameha, Swetapradara, Garbhasaya-dourbalya, Mutrakriccha, Mutraghata, Asmari, Kustha, Visarpa, Twakdosa, Visamajwara, Jeernajwara.

RITU HARITAKI

Haritaki acts as a rejuvenator (by cleaning various malas from the body). But for producing its rasayana effect, it needs various supportive dravyas in different seasons in the form of

⁽⁺ denotes presence, - denotes absence)

anupana (vehicle). So, Haritaki is administered with different anupana in different ritu (seasons). [8]

Anupana (vehicle) is defined as the pana (drink) which is taken immediately after ahara (food), oushadha anga and oushadha yoga (medicines). [9] As the oil added to water spreads quickly on the surface of water, so the oushadha (medicine) along with the Anupana spreads in the body and produces its effect when administered with appropriate Anupana. [10]

Table	4. Anupana	of Haritaki	according to Ritu	and the	ir ayurvedi	c properties.
u	Anupana	Rasa	Guna	Virya	Vipaka	Karma

Ritu	Anupana	Rasa	Guna	Virya	Vipaka	Karma
Varsha	Saindhava	Lavana	Laghu, Tikshna,	Sita	Madhura	Tridosahara, Rochaka,
v ai siia	lavana	Lavalia	Snigdha	Sita	iviauliula	Dipana
Sarad	Sarkara	Madhura	Guru, Snigdha	Sita	Madhura	VataPittasamana,
Sarau	Sarkara	Madifula	Guru, Siligulia	Sita	iviauliula	Brimhana
Hemanta	Sunthi	Katu	Laghu,	Usna	Madhura	VataKapha samana,
пешаща	Sulluli	Katu	Snigdha	Usha	Iviauiiuia	Dipana, Vrishya
Sisira	Pippali	Katu	Laghu, Snigdha,	Usna	Madhura	KaphaPittasamana,
Sisira	Pippaii	Katu	Teekshna	Usha	Iviauiiuia	Dipana, Vrishya
Vasanta	N/ 11	Kasaya	Laghu,	Sita	Madhura	Tridosa samana, Dipana,
vasanta	Madhu		Ruksha	Sita	Iviauiiuia	Balya
Grishma	Guda	Madhura	Guru, Snigdha	Sita	Madhura	Tridosa samana, Balya



Fig. e. Ritu Haritaki.

Varsha ritu (monsoon) is the first season lying under visarga kala (debilitating), when there is predominance of amla rasa (sour taste) and alpa rukshatwa(mild roughness). Simultanoeusly, Agni (digestive power) becomes irregular and Bala(strength) diminishes, Sanchaya (accumulation) of pitta dosa and Prakopa (aggravation) of vata dosa occurs in the

body. Haritaki along with Siandhava lavana acts as vata samaka due to the presence of madhura, amla rasa, ushna virya and madhura vipaka of Haritaki and lavana rasa, snigdha guna (unctuousness), and madhura vipaka of Siandhava lavana. This togetherly restores the equillibrium of vata and pitta, enhances the agni (digestion and metabolism) which was deranged due to the vata prakopa(aggravation of vata) and pitta sanchaya (accumulation of pitta).

Sarada ritu (autumn) is the second rity of the visarga kala, which is also considered as a sadharana ritu, during which there is predominance of lavana rasa(salty taste) and madhyama snigdhata (mild unctuousness). Agni becomes tikshna(increased), Bala becomes madhyama(moderate) and prakopa (aggravation) of pitta occurs in the body. Haritaki administered along with Sarkara(sugar candy) mitigates the aggravated pitta in the body due to snigdha Guna (unctuousness), madhura rasa (sweet taste) and madhura vipaka of Haritaki and madhura rasa, madhura vipaka and sheeta virya of Sarkara. They also help in alleviating the samana rupi vata and thus maintains proper equillibrium of the dosa.

Hemanta ritu (pre-winter) is classified as the last season of vasarga kala, during which there lies a predominance of madhura rasa(sweet taste) and snigdhatwa(unctuousness). Agni vriddhi, Bala vriddhi (increase of strength) and Kapha sanchaya (accumulation) occurs in the body. Haritaki along with Sunthi alleviated the sanchita kapha due to ushna virya (hot potency), katu, tikta, kashaya rasa (pungent, bitter, astringent taste) and laghu, ruksha Guna (lightness, dryness). However, the madhura vipaka and usna virya of these dravyas helps in maintaing the equillibrium of the pitta and vata dosa.

Sisira ritu (winter) lies under the first season of the adana kala, during which Bala kshaya (gradual decrease in strength) and Rukshatwa(dryness) occurs in the body, while there is accumulation of Kapha in the weather. Haritaki should be administered with Pippali which acts as Sleshmahara/Kaphahara (alleviates Kapha dosa) due to the presence of katu rasa (pungent taste), laghu, tikshna Guna (lightness and penetrating properties) and ushna virya. It also normalises the levels of vata and pitta, thus maintaining proper equillibrium of the dosa, dhatu and agni in the body.

Vasanta ritu (spring) is the second season of the adana kala, which lies under the sadharana ritu. During this season there is predominance of kasaya rasa (astringent taste) and madhyama rukshatwa (moderate dryness) in the weather, Bala kshaya occurs in the body. Haritaki along

with Madhu (honey) administered in this season alleviates the aggravated Kapha due to laghu, ruksha Guna (lightness and dryness), kashaya rasa (astringent taste) and Usna virya. But, due to the Madhura vipaka of this combination it helps in maintaing the equillibrium of the other two dosa and also acts as Rasayana.

Grishma ritu (summer) is the last season of the adana kala, which is also classified as a vishista ritu. During this season there is predominance of Katu rasa (pungent taste) and atirukshatwa (excessive dryness) in the weather. Considerable amount of Bala kshaya (loss of strength), Vata sanchaya (accumulation) and Kapha prasama (mitigation) occurs on the body. Haritaki along with Guda(jaggery) should be administered which balances the derangement of the above said dosa due to Guru and Snigdha Gunas (heaviness and unctuousness), madhura vipaka of jaggery and usna virya, madhura vipaka of Haritaki.

CHEMICAL CONSTITUENTS

Anthraquinone glycoside, Chebulinic acid, Chebulagic acid, Tannic acid, Terchebin, Tetrachebulin, Vitamin C, Arachidic acid, Behenic acid, Linoleic acid, Oleic acid, Palmitic acid, Stearic acid, Chebulin, 2- α -hydroxymicromeric acid, Maslinic acid, 2- α -hydroxy ursolic acid. [11]

Fig. f. Major chemical constituents of Haritaki.

PHARMACOLOGICAL ACTIVITY

Antimicrobial, Antifungal, Antibacterial, Antiviral. Antistress, Antispasmodic, Hypotensive, Endurance promoting activity, Anti Hepatitis B virus activity, Hypolipidaemic, anthelminthic, Purgative.[11]

Some of the pharmacological activities have been explained on the basis of research works that has been conducted on Haritaki.

Anti-bacterial activity: The broad spectrum antibacterial property of T. chebula against various pathogenic gram positive and gram negative bacteria has been reported. The ethanolic extract of the fruits of T. chebula was studied for its antibacterial action against standard reference bacterial strains of clinical importance and it was found that the extract was highly effective against Bacillus subtilis, S. epidermidis, S. aureus, Sal. typhi and Pseudomonas aeruginosa (Kanna et al., 2015). Moreover, Mostafa et al. explored the action of T. chebula as compared with traditional antibiotics, against enteric pathogens, namely, Shigella sp., Salmonella sp., Vibrio cholerae and Escherichia coli, where they found the potential antibacterial activity (Mostafa, Rahman, & Karim, 2011). [12]

Antiviral activity: Various investigations had displayed the repressive action of T. chebula on viral diseases caused by herpes simplex virus-1 (HSV-1), cytomegalovirus (CMV), influenza and human immunodeficiency virus type 1 (HIV-1) (Badmaev & Nowakowski, 2000; Kurokawa et al., 1995; Oyuntsetseg et al., 2014; Yukawa et al., 1996). The fruits of T. chebula were reported to have gallic acid and tannins as human HIV type I integrase inhibitors where galloyl component reportedly perform a pivotal function in hindering the 30processing of HIV-1 integrase (Ahn et al., 2002). Kurokawa et al. reported that T. chebula showed a stronger antiviral activity in conjunction with acyclovir (synthetic analogue of the purine nucleoside) opposed to HSV-1 infection in vivo and in vitro as evident by decrement in the yield of virus in the brain of mice (Kurokawa et al., 1995). [12]

Hepatoprotective activity: T. chebula extract may reportedly surpass the acetylaminofluoreneinstigated drug resistance and oxidative stress in the hepatic tissue and nullify the probable neoplastic transformation resulting in hepatocarcinoma by inhibiting the expression of multidrug resistance-1 via prevention of cyclooxygenase-2 (COX-2) expression and ROS generation through MAPK and Akt signalling (Nishanth, Prasad, Jyotsna, Reddy, & Reddanna, 2014). Furthermore, T. chebula averted the hepatotoxicity resulted by the

Ray et al.

application of isoniazid, pyrazinamide and rifampicin (in combination) in a sub-chronic mode possibly via its notable membrane stabilizing and anti-oxidative activities (Tasduq et al., 2006). Similarly, the water extract of T. chebula, attenuated the elevation of serum liver enzymes aspartate transaminase, alanine transaminase and lactate dehydrogenase level exerting a hepatoprotective effect against t-BHP-induced liver injury in C57/BL6 mice. [12]

Anti-hyperlipidemic activity and hypocholesterolemic activity: It was reported that in hyperlipidemic model of rats induced by atherogenic diet, the treatment with T. chebula on such rat models exhibited resulted into decline in triglycerides, total cholesterol, total protein and increase in high density lipoprotein cholesterol thus revealing its hypolipidemic activity (Maruthappan & Shree, 2010). Other finding has reported that oral administration of T. chebula to mice on atherogenic diet had successfully alleviated the effects related to high cholesterol containing diet as; body weight, serum cholesterol, triglyceride, thickening of the walls of aorta and shrinkage in its lumen (Rathore, Soni, & Bhatnagar, 2004). [12]

Immunomodulatory activity: The immunosuppressive response of CA and gallic acid, isolated from T. chebula, were found to block the CTL mediated cytotoxicity via blocking granular exocytosis in response to anti-CD3 stimulation (García Sevillano et al., 2014). Aher and Wahi (2010) reported that T. chebula alcoholic extract shows immunomodulatory activity on male Wistar rats as evident by increased in neutrophils, lymphocytes and linear time-dependent significant phagocytic activity with increase in the immunoglobulin level (Aher & Wahi, 2010). Aher and Wahi (2011) has explored the immunomodulatory of the dried ripe fruits of T. chebula at cellular level. The immunological effect was examined and the study reported that treatment with T. chebula extract has elevated the level of glutathione, superoxide dismutase and catalase (25.36, 252.22 and 273.32 units/mg protein, respectively), while the extract has decreased the level of LPO to 68.01 nmol MDA/g Hb. [12]

PART USED: Fruit rind^[6]

DOSAGE: Powder- 3-6 gm^[6]

INDICATIONS

Skin diseases, Leprosy, Stomatitis, Hyperacidity, Haemorrhoids, Jaundice, Hepatospleenomegaly, Helminthiasis, Flatulence, Constipation, Dyspnoes, Cough, Coryza, Wounds, Ulcers, etc.^[7]

THERAPEUTIC USES

External use: Sothahara, Vedanasthapana, Vranasodhana, Varanaropana

Nadi samsthana: Balya, Medhya

Pacana samsthana: Dipana, Pacana, Yakriduttejaka, Anulomana, Mridurecana,

Krimighna

Raktavaha samsthana: Hridya, Sonitasthapana, Sothahara

Swasana samsthana: Kaphaghna

Prajanana samsthana: Vrishya, Garbhasaya sothahara, Prajasthapana

Mutravaha samsthana: Mutrala

Twacha: Kusthaghna

Tapokrama: Jwaraghna Rasayana^[13] Satmikarana:

IMPORTANT FORMULATIONS

Abhayamodaka, Abhayarista, Pathyadi vati, Pathyadi kwath, Vyaghriharitaki, Haritaki leha, Chitrakaharitaki, Agastyaharitaki, Dantiharitaki, Haritaki khanda, Pathyadi churna. Abhayadi guggula, Abhayadi kalka, Amritaharitaki, Abhayamalakiya rasayana.^[14]

CLASSICAL USES OF HARITAKI

Disorders of Vata and Kapha

अभयाऽनिलकफे|(अ.ह.उ.४०.४८)

Haritaki is specifically efficatious in the disorders of vata and kapha^[15]

Fever.

1. ज्वरादविमुच्यते पीत्वा मृदवीकाभिःसहाभयाम्।पयोऽनुपानमुष्णं वापीत्वा द्राक्षारसं नरः॥ (च.चि.३.२३३)

Haritaki must be taken with draksha followed by intake of milk^[16]

2. सर्पिर्मध्वभया तैललेहोऽयंसर्वजंज्वरम्।शान्तिंनयेत्रिवृच्चापि सक्षौद्रा प्रबलंज्वरम्॥ (स्.उ. ३९.२१०)

पथ्यां तैल घृत क्षौद्रै र्लिहन्दाह ज्वरापहाम्। कासासृपित्तवीसर्प श्वासान्हन्ति वमी मिप॥ (भा.प्र.चि.१.३६२)

Linctus of haritaki made with ghee, honey and oil cures all types of fever^{[17][18]}

3. पिबेद वा षटपलं सर्पिरभयां वा प्रयोजयेत्। त्रिफलायाः कषायं वा गुड्च्यारस मेव वा॥ (च.चि.३.२९८)

Decoction of haritaki or triphala cures malarial fever. [16]

Diarrhoea

1. स्तोकं स्तोकं विबद्धं वा सश्लं यो sतिसार्यते। अभया पिप्पली कल्कैः स्खोष्णैस्तं विरेचयेत्॥ (स्.उ.४०.३३)

If stool comes out in small quantity and with obstruction and pain, the patient should be purgated with the warm paste of haritaki and pippalī. [19]

2. पथ्या सैन्धव शुण्ठी चूर्णंवा, लिह्याद वा त्रिकट्चूर्ण क्षौद्र शर्करोपेतम्, कपित्थं क्षौद्रेण वा, कट्फलं वा पिप्पलीर्वा। (अ.सं.चि.११.२७)

Powder of harītaki, rocksalt and sunthi should be taken with honey and sugar in caused by kapha. [18]

3. अभया पिप्पलीमूल बिल्वैर्वातानुलोमनी। (अ.ह.चि.९१.१४)

Gruel prepared with harītaki, pippalmula and bilva acts as carminative. [20]

4. अभया नागरं मुस्तं गुडेन सहयोजितम्। चतुःसमेयं गुटिका सर्वातीसार नाशिनी॥ (भा.प्र.चि.२.८८)

Harītaki, śunthi, mustaka and jaggery-these four mixed in equal quantity are made into pills known as "catuhsama modaka'. It checks all types of diarrhoea. [18]

Loss of appetite, Indigestion

1. वैश्वानर चूर्णम् (अ.ह.चि.१४.३४)

Harītakī is an important ingredient in vaisvānara cūrna. [21]

2. हरीतकीभक्ष्यमाणा नागरेण गुडेन च।सैन्धवोपहिता वा पिसातत्येनाग्निदीपनी।। (वृ.मा.६.८)

Haritaki taken regularly with sunthi or jaggery of rocksalt promotes digestive power. [18]

3. पथ्या पिप्पलि संयुक्तं चूर्ण सौवर्चलं पिबेत्। (वृ.मा.६.२२)

One should take powder consisting of harītaki, pippali and sauvarcala. [18]

4. विदहयतेयस्यत्भुक्तमात्रं दहयेतहृत्कोष्ठगलं च यस्य।द्राक्षा सिता माक्षिकसं प्रयुक्तां लीढ्वा sभयां वैसस्खं लभेत॥ (वृ.मा.६.२५)

In case there is burning sensation in bowels, cardiac region and throat after meal, haritaki mixed with drākṣā, sugar and honey should be taken which gives relief. [18]

5. विजया पिप्पली शुण्ठी त्रिसमं परिकीर्तितम्। अग्निसंदीपनं नृणां तृ इ्दोषभय नाशनम्॥ (बं.से.अजीर्ण.१९)

Haritaki, pippalī and Sunthi-this is known as 'trisama' (three in equal) quantity, which promotes digestive power and prevents thirst etc.^[18]

6. गुडेन. . . . 'पथ्यांतृतीयामथदाडिमंवा। आमेष्वजीर्णेषुगुदामयेषुवर्षोविबन्धेषुचनित्यमद्यात्। (भा.प्र.चि.६.३५)

In condition of amadosa, indigestion, piles and constipation one should use regularly haritaki with jiggery. [18]

Grahaniroga

तक्रेणवल्कलं पीतं स्निग्धं पथ्यातरूद्भवम्। ग्रहणींनाशयेत्क्षिप्रमामरक्ताश्रितांधुवम्॥ (बं.से.ग्रहणी.१६८)

The bark of haritaki tree taken with buttermilk alleviates grahaniroga associated with ama and blood.^[18]

Udavarta

अभया त्रिवृत कुलत्थैः शृतमुदकं पिप्पली रजो युक्तम्। चित्रा तैलविमिश्रं पीतमुदावर्त्तम स्यतित्रिदिनात्॥ (वै.म.५.९)

Decoction of haritaki, trivrit and kulattha mixed with pippali powder and danti oil cures udavarta within three days.^[18]

Haemorrhoids

1. गोम्त्राध्युषितां दद्यात्स गुडां वा हरीतकीम्।हरीतकीतक्रयुतां त्रिफलां वा प्रयोजयेत्॥ (च.चि.१४.६७)

Harītaki kept in cow's urine and mixed with jaggery should be given or it may be given with butter-milk.^[22]

2. सगुडां पिप्पलीयुक्तांघृतभृष्टां हरीतकीम्।त्रिवृदन्तीयुतां वा पिंभक्षयेदानुलोमिकीम्॥ (च.चि.१४.११९)

Haritaki fried in ghee and mixed with jaggery and pippali or with trivrit and danti should 3.

ब्रहमचारी गोमूत्रद्रोगसिद्धं वा हरीतकी शतं प्रातर्यथाबलं क्षौद्रेण। (सु.चि.६.१३)

Harītaki cooked in cow's urine should be taken with honey in morning according to strength. (also AH.C1.8.55-56)^{[23][24]}

4. सगुडामभयांवापिप्राशयेत्पौर्वभक्तिकीम्।(च.चि.१४.६५), प्रातःप्रातर्गुडहरीतकीमासेवेत।(सु.चि.६.१३)

Harītaki mixed with jaggery should be taken before meals. [22][23]

5. प्राणदां वातक्रानुपानां सगुडाम्। (अ.सं.चि.१०.१२; अ.ह.चि.८. ३३)

Harītaki mixed with jaggery should be taken followed by intake of buttermilk. [18]

6. पथ्यारसोनयो भागं निष्कंद्वौवज्रवल्लिजी। ईपल्लवण तैलाक्तमेतदर्शासिनाशयेत्॥ (वै.म.५.७)

Haritaki and rasona each 4 gm and asthisamhāra 8 gm mixed with a little salt and oil destroy haemorrhoids. [18]

Raktapitta

1. अपहरति रक्तिपत्तं कण्डूं गुल्मञ्च पैत्तिकं सधः। जीर्णज्वरञ्च शमयति मृद्वी कासं युतापथ्या॥ (ग.नि.२.८.६३)

Haritaki mixed with dräkṣā alleviates intrinsic haemorrhage, itching, paittika gulma and chronic fever. [18]

2.अभया मधुनायुक्ता पाचनीदीपनी मता।श्लेष्माणं रक्तिपत्तं च हन्तिश्लातीसार नुत्।। (वृ.मा.९.२४)

Harătakī mixed with honey acts as digestive and appetiser. It also alleviates kapha, intrinsic haemorrhage, colic and diarrhoea.^[18]

3. वासक स्वरसे पथ्या सप्तधापरिभाविता। कृष्णावामधुनालीढा रक्तपित्तंद्रुतं जयेत् (च.द.९.२७)

Harītaki impregneted with the juice of vāsă seven times checks intrinsic haemorrhage. [18]

Vomiting

लियान्मधुनाऽभयाञ्च। (च.चि.२०.२९; वृ.मा.१५.८)

One should take haritakī with honey. [25]

Cough

1. पथ्या शुण्ठी घन गुडै र्गुडिकां धारयेत्मुखे। (अ.ह.चि.३.१७२; वृ.मा.११.२४)

Pill prepared with haritaki, śunthi, mustaka and jaggery should be kept in mouth. [18][26]

Hiccough and asthma

1. हरीतकीकोष्णजलानुपानां पिबेद्घृतंक्षारमधूपपन्नम्। (सु.उ.५०.२४)

In hiccough, one should take haritaki with warm water. Harītaki powder should be taken mixed with profuse honey and ghee.^[27]

2. श्वासेकासे च हिक्कायां हृद्रोगेचापिपूजितम्। घृतंपुरणं संसिद्धमभया विडरामठैः।। (सु.उ.५१.१६)

Old ghee cooked with haritaki, bida and hingu is useful in asthma, cough, hiccough and heart-disease.^[28]

Anaemia and jaundice

1. कफपाण्डुस्तु गोमूत्रक्लिन्नयुक्तां हरीतकीम्।आरग्वधं रसेनेक्षोर्विदार्यामलकस्य च।।

(च.चि.१६.५८)

Patient of kaphaja pandu should take haritaki impregnated with and suspended in cow's urine. [29]

तुल्याअयोरजःपथ्या हरिद्राः क्षौद्र सर्पिषा। चूर्णिताः कामली लिह्यात्गुड क्षौद्रेण वा अभयाः। (च.चि.१६.९८)

Lauhabhasma, haritaki and haridra in cqual parts mixed with honcy and ghee should be taken with jaggery and honey in case of jaundice. [29]

4. मुत्रेण पिष्टां पथ्यां वातसिद्धं वा फलत्रयम्। (अ.इ.चि.१६.७)

Harītaki pounded with urine or triphală cooked in cow's urine should be taken. [30]

Udararoga.

1. क्षीरानुपानां गोमूत्रेणाभयां वा प्रयोजयेत्। सप्ताह माहिषंमूत्रक्षीरं चाननभुक्पिबेत्॥ (च.चि.१३.१५१)

One should take haritaki with cow's urine followed by milk, keeping, for a week, on buffalo's urine and milk with no cereals in diet.^[31]

2. हरीतकी सहस्रं वा क्षीराशी वा शिलाजतु। (च.चि.१३.१५२)

One should use 1000 haritaki fruits or Siläjatu following milk diet.^[31]

Enlargement of Liver and spleen

3. यकृतप्लीहोदरे पथ्या रोहीतक क्वार्थ यवक्षारकणायुतम्। पिबेत्प्रात र्यकृत्प्लीहगुल्मोदर निवृत्तये॥(शा.सं.२.२.१२१)

Decoction of harītakī and rohitaka mixed with yavaksāra and pippali should be taken in morning for alleviation of the enlargement of liver and spleen, gulma and udara. [18]

Oedema

1. पीतं कफोर्त्थंशमयेत्तुशोफ गव्येनमूत्रेण हरीतकी च॥ (च.चि.१२.२१)

Haritaki taken with cow's urine alleviates odema caused by kapha. [32]

2. माक्षिकेण च कृष्णां च लिह्यात्क्षीरेण वा पिबेत्॥ (भे.सं.चि.१७.२०)

Harītaki and pippali combined should be given with honey followed by milk. [18]

3. हरीतकी शृङ्गबेरंदेवदारु च तत्समम्। एतत्स्खाम्ब्नापीतंश्वयथूनां निवारणम्॥ (भे.सं.चि.१७.२१)

Harītakī, śunthi and devadāru all in equal qunantity are mixed together and taken with warm water. It removes ocdema. [18]

4. तक्रान्पानामथवा तदवद वा गुडनागरम्॥ (अ.ह.चि.१७.५)

Haritaki or sunthi mixed with jaggery should be taken with butter milk. [33]

Kustha

1.पञ्चाभयास्त् सव्योषाः सग्डावापि चूर्णिताः।लिहयात्पथ्याशनः कृष्ठशान्तिर्वानचिराद्भवेत्॥ (भे.सं.चि.६.५५)

Five haritaki fruits powdered and mixed with trikatu and jaggery should be taken keeping on wholesome diet.[18]

2.पथ्यातिलगुडै: पिण्डीकुष्ठंसारुष्करैर्जयेत्।गुडारुष्करजन्तुघ्नसोमराजीकृताsथवा॥ (अ.ह.चि.१९.४७)

Bolus made of haritakī, tila, jaggery and bhallātaka alleviates kustha. [34]

3. शोथ पाण्ड्वामयहरी गुल्ममेहकफापहा।कच्छ्पामाहरीचैव पथ्या गोमुत्रसाधिता॥ (वृ.मा.५१.४२)

Harītaki cooked with cow's urine removes oedema, aneamia, gulma, prameha, kapha, scabies and eczema.[18]

Obesity

1. सन्तर्पणकृतान्रोगान्प्रायो हन्ति हरीतकी। (स्.स्.४४.६७)

Haritakī almost alleviates disorders caused by oversaturation. [35]

Prameha

(क्षौद्रेणलियात्) हरीतकीचूर्णवा। (अ.सं.चि.१४.५)

Haritaki powder should be taken with honey.^[18]

2. तक्राभयाप्रयोगैश्च त्रिफलायास्तथैवच।अरिष्टानां प्रयोगैश्च यान्तिमेहादयःशमम्।। (च.स्.२३.१७)

Prameha etc. (diseases caused by saturation) are controlled by the use of butter-milk and harītaki, triphalā and aristas.^[36]

Amlapitta

सद्राक्षामभयां खादेत्सक्षौद्रांसग्डाञ्चताम्। (वृ.मा.५३.१४)

Haritaki should be taken with dräksā or with honey and jaggery. [18]

Parināmasula

पथ्यालोहरजः शुण्ठीचुर्णंमाक्षिकसर्पिषा। परिणामरुजं हन्ति वातपित्तकफात्मिकाम्॥ (वृ.मा.२७.१२)

Haritaki, lauhabhasma and sunthi taken with honey and ghee removes parināmaśūla of all types.[18]

2. सग्डांघृतसंयुक्तां भक्षयेद वा हरीतकीम्। (भा.प्र.चि.३०.५१)

One should take haritaki with jaggery and ghee. [18]

Filaria

1. पिबेदवाऽप्यभया कल्कं मूत्रेणान्यतमेन च। (स्.चि.१९.५७; वृ.मा.४२.१०)

Paste of haritaki should be used with any urine. [18][37]

2. गन्धर्वतैल गृष्टां हरीतकी गोजलेनयः पिबति। श्लीपद बन्धन मुक्तो भवत्यसौसप्तरात्रेण॥ (वृ.मा.४२.१५; भा.प्र.चि.४५.१५)

One who takes haritaki fried in castor oil with cow's urine becomes free from filarial within a week.[18]

Vătavyadhi

मूत्रैर्वाशीलयेत्पथ्यां गुग्गुलुंगिरि संभवम्। (अ.ह.चि.२१.४९)

One should use regularly haritaki, guggulu and Sılajatu. [38]

Amavata

1. एरण्डतैलयुतां हरीतकी भक्षयेन्नरो विधिवत्। आमानिलार्तियुक्तो गृधसि वृद्धयर्दितोनित्यम्॥ (वृ.मा.२५.११; भा.प्र.चि.२६.५१)

One suffering from amaväta, sciatica and scrotal enlargement should regularly take haritaki with castor oil. [18]

2. पथ्याविश्वयवानीभिस्तुल्याभिश्चूर्णितं पिबेत्। तक्रेणोष्णोदकेनापि अथवा काजिकेनतु॥ आमवातं निहन्त्याशुशोथं मन्दाग्नितामपि। (वृ.मा.२५.३४)

Powder of haritaki, Sunthi and yavāni in equal parts should be taken with buttermilk or hot water or sour gruel. It alleviates amaväta, oedema and loss of appetite.^[18]

Vatarakta

1. मूत्रतोययोरन्यतरेण गुड हरीतकी वा भक्षयेत्। (सु.चि.५.१०)

Haritaki mixed with jaggery should be taken either with urine or water. [39]

2. कषायमभयानां वा पाययेद्घृतभर्जितम्।क्षीरानुपानं त्रिवृताचूणं द्राक्षारसेन वा॥ (अ.ह.चि.२२.१२)

Decoction of haritaki fried with ghee should be taken. Similarly trivrit powder may be taken with grape juice followed by intake of milk.^[40]

Urustambha

क्षारारिष्ट प्रयोगाश्च हरीतक्यास्तथैव च।मधूदकस्य पिप्पल्या ऊरुस्तम्भ विनाशनाः॥ (च.चि.२७.२८)

Use of kṣāra and arista, haritaki, honey-water and pippali alleviates ürustambha. [41]

Calculus, retention of urine

1. हरीतक्यादि सिद्धंवा वर्षाभू सिद्धमेव वा। (सु.चि.७.२६)

हरीतक्यस्थि सिद्धंवासाधितं वा पुनर्नवैः।क्षीरानभुग्बर्हिशिखामूलं वातण्डुलाम्बुना। (अ.इ.चि.११.३३)

One should take milk boiled with triphalā or punarnavā. [42][43]

2. अभयामलकाक्षाणां कल्कं बदरसम्मितम्।अम्भसाऽलवणोपेतं पिबेन्मूत्ररुजापहम्।।(सु.उ.५८.३८)

Paste of triphalā of the size of jujube fruit should be added with a little salt and taken with water. It relieves dysuria. [44]

Coryza

निवातशय्यासनचेष्टनानि मुर्धानों गुरूष्णं च तथैववासः। तीक्ष्णा विरेकाः शिरसः सधूमाः रूक्षंयवान्नं विजया च सेव्या॥ (स्.उ.२४.२१)

One should use a windless place, keep head warm and take ruksha diet of barley and haritaki.^[45]

Eye diseases

1. पथ्याफलेन प्रतिसारयेत्तु पृष्टेन वा तौवरकेण सम्यक्। (सु.उ.१६.८)

In pakşmakopa, harītakī or ghee processed with tuvaraka should be applied. [46]

2. प्रातर्भक्तस्यवा पूर्वमधात्पथ्यां पृथक्पृथक्। मृद्वीको शर्करा क्षौद्रैः सततं तिमिरातुरः॥ (अ.इ.उ.१३.१९)

One suffering from defects of vision should take haritaki in moming or before meals or he should take drāksă with sugar and honey.^[47]

Rasayana

1. गुडेन मधुनाशुण्ठ्या कृष्णया लवणेन वा। द्वे द्वे खादन्सदा पथ्येजीवेद बर्षशतं सुखी॥ (अ.इ.उ.३९.१४७)

सिन्धूत्थ शर्करा शुण्ठी कणा मधु गुडैः क्रमात्।वर्षादिष्वभया प्राश्या रसायनगुणैषिणा॥ (वृ.मा.६९.३)

Two haritaki fruits taken with jaggery, honey, sunthi, pippali and salt (according to season) provide happiness and longevity. [48][18]

2. हरीतकी सर्पिषि संप्रताप्य समश्नतस्तित्पबतो घृतञ्च। भवेच्चिरस्थायि बलं शरीरे सकृत्कृतं साध् यथा कृतज्ञे॥ (अ.इ.उ.३९.१४८)

Haritaki fried in ghec should be taken followed by the intake of ghee. It provides firm strength in the body.^[48]

Gulma

सग्डां वा हरीतकीम्। (स्.उ.४२.६२)

Harītaki taken with jaggery is useful. [49]

REFERENCES

- 1. Ayurveda Pharmacopoeia of India, Ministry of health and family welfare, department of Indian system of medicine & Homoeopathy, Govt. of India, New Delhi, Part I, Volume I, Page 62.
- 2. The Integrated Taxonomic Information System on-line database, https://www.itis.gov
- 3. Sharma P.V., Namarupajnanam (Characterization of Medicinal Plants), Chaukhambha Visvabharati Oriental Publishers and Distributors, Varanasi, Reprint, 2011; Page 196-197.
- 4. Sastry J.L.N., Illustrated Dravyaguna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint 2012, Volume II, Page 210.
- 5. Database on Medicinal Plants used in Ayurveda, Central Council for Research in Ayurveda and Siddha, Dept. of ISM & H, Ministry of Health and Family Welfare, Govt. of India, New Delhi, Reprint 2005, Volume III, Page 282.
- 6. Sastry J.L.N., Illustrated Dravyaguna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint 2012, Volume II, Page 211.
- 7. Database on Medicinal Plants used in Ayurveda, Central Council for Research in Ayurveda and Siddha, Dept. of ISM & H, Ministry of Health and Family Welfare, Govt. of India, New Delhi, Reprint 2005, Volume III, Page 283.
- 8. Chunekar. K.C, Bhavaprakasha Nighantu of Bhavamishra, Choukhamba Bharati Academy, Varanasi, 1999, Volume-I., 9th edition., Page 7.
- 9. Shastry J.L.N. Dravya guna vignana, Vol I, reprint, Varanasi: Chaukhambha Orientalia Varanasi, 2006; pp 358.
- 10. Tripathy Bramhananda, Sharangadhara samhita purvardha, Chowkhamba bharati prakashana, Varanasi: Reprint 2004, Page 173.
- 11. Database on Medicinal Plants used in Ayurveda, Central Council for Research in Ayurveda and Siddha, Dept. of ISM & H, Ministry of Health and Family Welfare, Govt. of India, New Delhi, Reprint 2005, Volume III, Page 284.

- 12. Nigam et al., Fruits of Terminalia chebula Retz.: A review on traditional uses, bioactive chemical constituents and pharmacological activities, Phytotherapy Research. 2020;1–16, DOI: 10.1002/ptr.6702.
- 13. Sharma P.V., Dravyaguna Vijnana, Chaukhambha Bharati Academy, Varanasi, Reprint 2018, Volume II, Page 755.
- 14. Database on Medicinal Plants used in Ayurveda, Central Council for Research in Ayurveda and Siddha, Dept. of ISM & H, Ministry of Health and Family Welfare, Govt. of India, New Delhi, Reprint 2005, Volume III, Page 285.
- 15. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Uttaratantra, Chapter 40.
- 16. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 3.
- 17. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 39.
- 18. Sharma P.V., Classical uses of Medicinal Plants, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2018.
- 19. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 40.
- 20. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 91.
- 21. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 14.
- 22. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 14.
- 23. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume II, Chikitsa sthana, Chapter 6.
- 24. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 8.
- 25. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 20.
- 26. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 6.
- 27. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 50.

- 28. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 51.
- 29. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume II, Chikitsha sthana, Chapter 16.
- 30. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 16.
- 31. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 23.
- 32. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 12.
- 33. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 17.
- 34. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 19.
- 35. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume I, Sutra sthana, Chapter 44.
- 36. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume I, Sutra sthana, Chapter 2.
- 37. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume II, Chikitsa sthana, Chapter 19.
- 38. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 21.
- 39. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume II, Chikitsa sthana, Chapter 5.
- 40. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 22.
- 41. Sharma R.K., Dash Bhagwan, Caraka Samhita, Chowkhamba Sanskrit Sries Office, Varanasi, Edition: Reprint 2011, Volume III, Chikitsha sthana, Chapter 27.
- 42. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume II, Chikitsa sthana, Chapter 7.
- 43. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Chikitsa sthana, Chapter 11.
- 44. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 58.

- 45. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 24.
- 46. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 16.
- 47. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Uttaratantra, Chapter 13.
- 48. Gupta Atridev, Upashyaya Yadunandan, AstangaHridayam of Vagbhata, Chaukhamba Prakashan, Varanasi, Reprint 2021, Uttaratantra, Chapter 39.
- 49. Sharma P.V., Sushruta Samhita, Chaukhambha Visvabharati Oriental Publishers & Distributors, Varanasi, Reprint 2010, Volume III, Uttaratantra, Chapter 42.